

## Remarks

### Correction of Inventorship

A petition under 37 CFR 1.48(b) to delete Joseph McAndrew as inventor was filed on September 19, 2002. Mr. McAndrew's contribution is no longer being claimed as an invention. Accordingly, please correct the inventorship by deleting Joseph McAndrew as an inventor.

### Response to Office Action

Applicant's election of Invention I, claims 1-8, 10, 11, 13-19, 21-30, 32, 33 ... is acknowledged . . . However, a review of the above elected claims indicates that claims 13-15, 17-19, 21, 22 are directed to the non-elected method and hence will be withdrawn . . .

The withdrawal of these claims is acknowledged.

The disclosure is objected to because of the following informalities: Page 1, line 28 and page 2, line 1, note that "long packaging" should be rephrased for a better description.

The term "traditionally require long packaging" has been rephrased and now reads "typically requires a relatively long parts housing (i.e., package) size". not

Page 3, lines 1, 8, note that "CP" and "CTE" need to be strictly defined.

It appears that the Examiner has overlooked the definitions already contained in the specification. The term "CP" was defined at page 2, line 5 as "ceramic/polymide." The term "CTE" was defined at page 2, lines 31-34 as "coefficient of thermal expansion."

Page 13, lines 21-26, note that reference to (P1, P2, P3, P4. ) are vague in meaning and needs clarification.

The specification has been amended to clarify the reference to P1, P2, P3, P4. See replacement paragraph beginning at page 13, line 17.

The disclosure is objected to because of the following informalities: Note that all drawing figures need to be explicitly described in the specification. For example, figs. 7, 8, 11-22, 26b, 27a, 27b need explicit individual description in the specification.

Figures 7, 8, 11-22, 26b, 27a, 27b are described on pages 7-9. The Examiner has not cited any rule suggesting that this is not adequate. If the Examiner feels that the description as provided is not adequate, the undersigned request that the Examiner cite

the appropriate rule so that the undersigned is able to better understand the Examiner's objection.

Also, for each individual drawing figure, each reference label therein needs on explicit description. For example, fig 2a (140, 150, 160, 170); figs. 5a, 5b (310, 320); fig. 6 (320, 501), etc. need explicit description relative to the corresponding specifications description of the drawing. Appropriate correction is required.

The specification has been amended to include reference labels 140, 150, 160, 170 at an appropriate section of the disclosure. See replacement paragraph beginning at page 5, line 27.

As required by 37 CFR 1.84(p)(4), "The same part of the invention appearing in more than one view of the drawing must always be designated by the same reference character." Consequently, reference numerals 310, 320 in Figs 5a, 5b refer to the same numbered element explicitly described on page 11 at lines 14-24 with respect to Fig. 3. Reference numeral 501 in Fig. 6 refers to the same element described with respect to Fig. 5 (See page 12, line 16). The undersigned respectfully disagrees with any suggestion by the Examiner that numbered elements 310, 320, and 501 must be explicitly re-described within the description of Fig. 5a, 5b, and Fig. 6. If the Examiner disagrees, then it is requested that the Examiner cite a rule or law supporting his position.

The drawings are objected to because of the following: In fig. 2a, the --Z axis--needs to be shown;

A replacement drawing has been provided showing the "Z-axis".

In figs. 12-17, note that (P1, P2, P3, P4) need to be labeled as per the specification description (see p 13, ls 21-26);

Replacement drawings have been provided with labeling P1, P2, P3, P4 added as appropriate.

In fig. 23, note that reference label --2301--needs to be provided.

The specification has been amended to remove the reference to 2301. No new drawing is required.

Claims 1-4, 6-8, 10, 11; 23-26, 28-30, 32, 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point

out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 23 note that it is unclear, even in light of the specification, what characterizes "defining levels". Clarification is needed.

The term "defining levels" has been deleted from the claims and clarifying language added.

In claims 1-4, 23-26, note that "spiral-like" expands the scope of "spiral", thereby rendering the spiral shape vague and indefinite. (I.e. what shapes is encompassed by "spiral-like"?)

The term "spiral-like" is used to avoid a confused claim reading that could occur if an overly restrictive, and unintended, definition of "spiral" was used. For example, the term "spiral-like" may help prevent one from taking the view that "spiral" refers to a shape circling around a fixed point and constantly increases or decreases in distance from the fixed point. Such an interpretation of "spiral" is not intended. Instead, the patent specification makes clear that "spiral-like" is to be read broadly. For example, at page 10, lines 11-15, example "spiral-like" implementations are defined. The Examiner is referred to the specification reciting that:

"it is possible for a microwave circuit having several components to be configured most efficiently by utilizing a spiral-like coupler that is substantially L-shaped or U-shaped, by way of example only".  
(specification as filed, page 10, lines 11-15, underlining added).

Thus, the term "spiral-like" is, indeed, a broad term. In light of the specification, it is believed that there are reasonable bounds on this claim term. For example, the term "spiral-like" would exclude couplers fashioned as simple straight-line couplers along their entire coupling portion. It is believed that the patentee has reasonably exercised his right to be his own lexicographer by providing specification sufficiently clear for a reasonable practitioner to understand the term "spiral-like". *In re Hill*, 161 F.2d 367, 73 USPQ 481 (CCCPA 1947) (the patentee has the right to be his own lexicographer) cited at MPEP § 2111.02. Nevertheless, if the Examiner feels that another claim term would

provide further clarification without unduly restricting the claim interpretation, the undersigned would welcome a call from the Examiner to discuss alternative phrasings.

In claim 7, note that it is unclear what characterizes "a plurality of planes" (i.e. "Planes" of what?).

The claim language has been amended to clarify that the planes are planes formed by adjacent surfaces of pairs of the substrate layers

In claims 10, 11, 32, 33, note that these claims improperly depend from respectively canceled claims.

The claims have been amended to correct these errors.

Regarding claims 23, 28-30, the word "means" is preceded by the word(s) "substrate", "metal layer" and "coupling lines, respectively" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

The Examiner's rejection in light of *Ex parte Klumb* is respectfully traversed. Contrary to what the Examiner suggests, *Ex Parte Klumb* does NOT require that the words preceding "means" specify function; merely that there be some words that do. The particular situation in *Ex Parte Klumb* was one in which the claim recited certain "means" elements ("plate means" and "wing means") and failed to recite any functional language following "plate means" and "wing means." The court said that, in such a situation, it was appropriate to look at the words preceding "means" in an attempt to identify function. Contrary to the Examiner's suggestion, the court did not require language preceding "means" be functional.

Claims 23 and 28-30 of the present application do not present a situation to which the *Ex Parte Klumb* holding is applicable. For example, in claim 23 the term "fluoropolymer composite substrate means" is clearly followed by the functional language "for defining substrate layers and substrate layer surfaces." Similarly, "metal layer means disposed on said surfaces" is followed by the language "to define a plurality of conducting layers" and "coupling lines means" is followed by the language "for forming a coupler having a substantially spiral-like shape". In each case, there is a clear recitation of functional language following the "means" clause and, therefore, it is NOT

appropriate to apply *In Re Klumb*. It is noted that the term “grounding means” is followed by a structural recitation “comprising a first subset of said plurality of conducting layers” and, consequently, is believed to be outside the scope of section 112 paragraph 6.

The following claims have been found objectionable for reasons set forth below:

In claims 1, 23, note that --respective--should precede each occurrence of "surfaces" for a proper characterization.

The undersigned believes that the claim as presented to the Examiner properly characterizes the invention and that the suggested addition of “respective” would reduce claim clarity. Adding the term “respective” may imply that there is a one-to-one correlation between, for example, metal layers and surfaces. As a result, it may be implied that each surface of each substrate layer is metalized. This is not required by the claims (though in preferred embodiments this may occur). For example, it is entirely possible for an implementation to have two substrate layers with adjacent surfaces where neither layer is metalized. The claim term “said surfaces”, as currently used, merely requires that where surfaces are being referenced, the reference is to surfaces of the substrate. If the Examiner feels that additional clarity is needed, the undersigned would welcome an alternative suggestion that is free of the just-described problem with the term “respective”.

In claim 8, note that "is" should be rewritten as --comprises-- for a better characterization. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Claim 8 has been rewritten as suggested by the Examiner.

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

A petition under 37 CFR 1.48(b) to delete Joseph McAndrew as inventor was filed on September 19, 2002. Mr. McAndrew's contribution is no longer being claimed as an invention. Accordingly, please correct the inventorship by deleting Joseph McAndrew as an inventor.

Claims 1-4, 6, 8; 23-26, 28-30 are(a) rejected as being unpatentable over Fujiki in view of Juskey et al

Fujiki (Fig. 2) discloses a multi-layer coupler arrangement comprising a multi-layered substrate (2-7) upon which conductive layers are disposed on surfaces thereof.

\* \* \*

Accordingly, it would have been obvious in view of the references, taken as a whole to have realized the multi-layer substrate of Fujiki as having a fluropolymer material instead of the conventional ceramic material.

Such a modification would have been obvious in view of the exemplary teaching in Juskey et al that fluoroplastic substrate materials provide advantages with respect to propagation delay and dielectric loss as compared to conventional ceramic (e.g. glass epoxies) multi-layered substrates, thereby suggesting the obviousness of the combination. Although the spiral shape coupler of the combination is rectangular in form, obviously alternative yet equivalent spiral shapes (e.g. circular, oval, etc) would have also been usable, especially since the coupler's function would not have been affected by it's shape.

The Examiner has not specifically stated the statutory basis for his rejections. It is presumed that the Examiner's rejections are made under 35 U.S.C. § 103(a).

Claim 1 recites a microwave circuit package wherein at least two of the substrate layers have different dielectric properties. Neither Jusky nor Fujiki, alone or in combination, suggest the use of substrate layers having different dielectric properties. The use of substrates having different dielectric properties can enable improved phase and impedance matching of the coupler than would be obtained using the coupler taught by Fujiki, alone or in combination with the teachings of Jusky. Because Fujiki and Jusky fail to provide any teaching or motivation to use substrate layers having different dielectric properties, the rejection of claim 1 as unpatentable over Fujiki in view of Juskey et al is not supported under 35 U.S.C. § 103(a).

Claim 34 recites a microwave circuit package that includes a conductive via comprising a same metal as comprises a metal layers on at least one surface of said pair of substrate layers. Neither Fujiki or Jusky teach the use of conductive vias that are made of the same metal as the metal layers on the surfaces of substrate layers. In fact, Fujiki explicitly teaches that conductive vias are formed by filling holes with conductive paste. See Fujiki, column 4, lines 18-24. Thus, Fujiki teaches that conductive vias are formed of an entirely different material than is used for ground planes and other metalized layers. In contrast, the claim 1 requires conductive vias formed of the same metal as is used for metalizing surfaces of the substrate. As a results, claim 1 is recites a different structure than is disclosed or suggested by Fujiki and Jusky and, therefore, rejection under 35 U.S.C. § 103(a) is not supported.

Claim 23 recites a microwave circuit package that includes a conductive via comprising a same metal as forms conducting layers. As discussed with respect to claim 34, neither Fujiki nor Jusky disclose or suggest a microwave-circuit package having a conductive via comprising a same metal as forms conducting layers and including elements as further recited in claim 23. For substantially the same reasons stated with respect to claim 34, rejection under 35 U.S.C. § 103(a) is not supported.

The remaining claims of the application depend, directly or indirectly, from independent claim 1, 23 or 34 and are allowable for at least the same reasons stated with respect to the depended-from independent claim.

Dependent claim 41 recites the microwave circuit of claim 34 wherein the plurality of groundplanes are disposed over the surface of the substrate layers such that the groundplanes extend over an entire surface of the substrate layers other than in areas of isolation cut-outs that isolate the ground planes from signal port terminal connectors. See, for example, 5a and 5b of the present invention showing groundplanes that extend along edges of the substrate other than in the signal port terminal areas 310 that are separated by isolation cut-outs. It is noted that the structure disclosed in Fujiki includes groundplanes that are recessed from the edges of the substrate layers other than in areas where the ground planes contact grounding terminals. See, for example, Fig. 2 of Fujiki

showing a groundplane 6b that is recessed from the edges of the substrate layer 6. If the Fujiki ground planes were extended edge-to-edge on the substrate layer, they would contact signal terminal conductors (e.g., 6d, 6e) which would render the device inoperable. Nowhere does Fujiki teach or suggest the use of isolation cut-outs on the ground planes is claimed in Fig. 41 to enable extension of groundplanes edge-to-edge on a substrate layer. For the foregoing reasons, in addition to those stated with respect to claim 34, dependent claim 41 is patentable over the combination of Fujiki and Jusky.

#### CONCLUSIONS

Claims 1-4, 6-8, 10-11, 23-26, 28-30, 32-41 are now pending and are believed to be in condition for allowance.

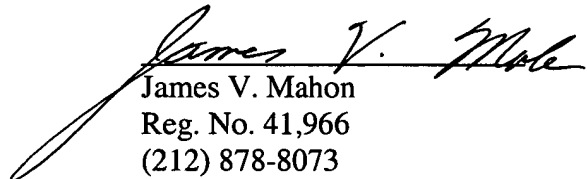
No new matter has been added.

Please apply any credits or excess charges to our deposit account number 50-0521.

Date: April 18, 2002

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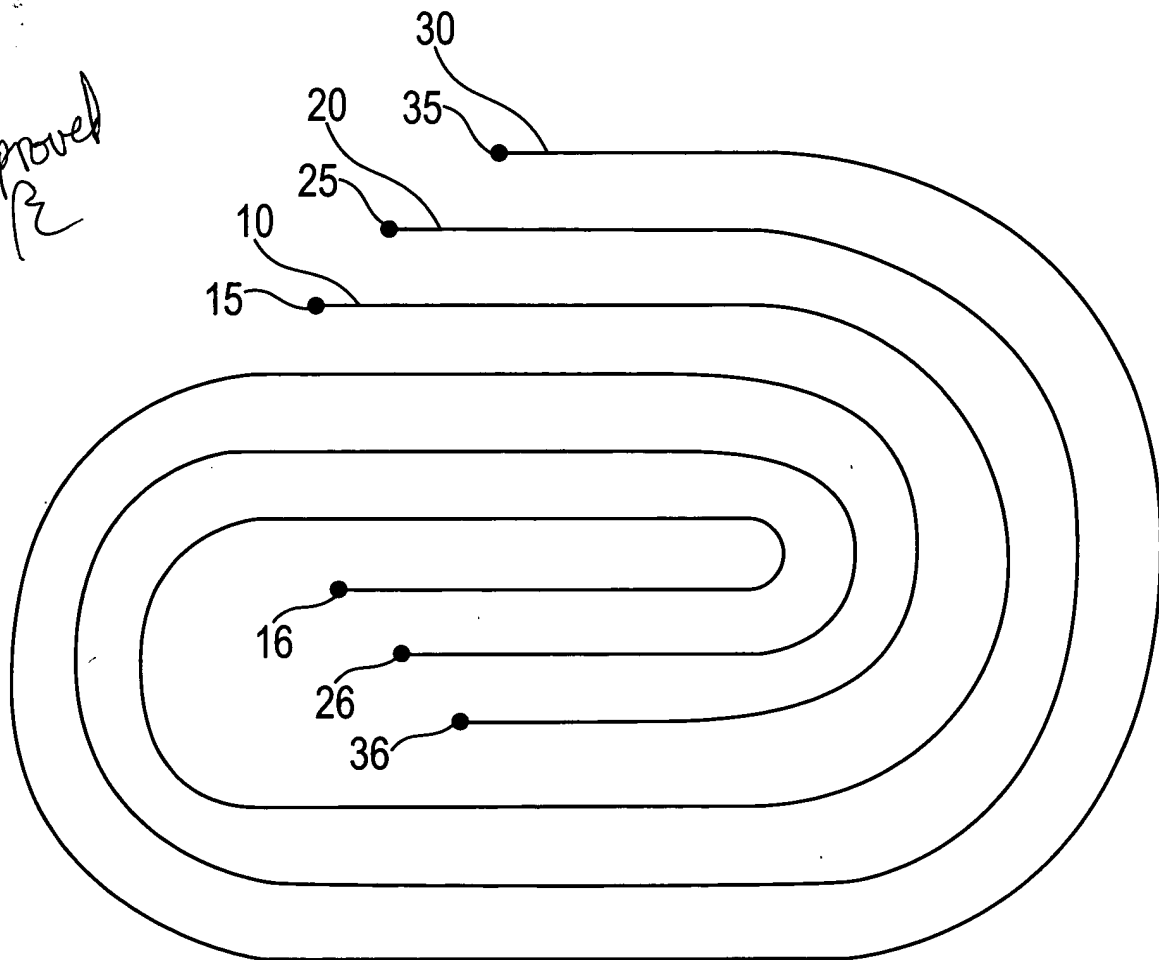


FIG. 1

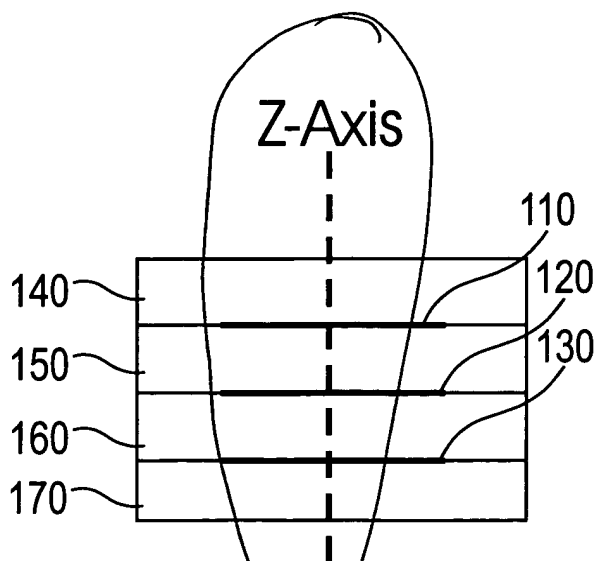


FIG. 2a

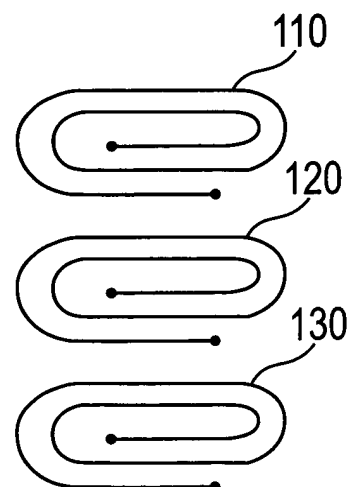


FIG. 2b



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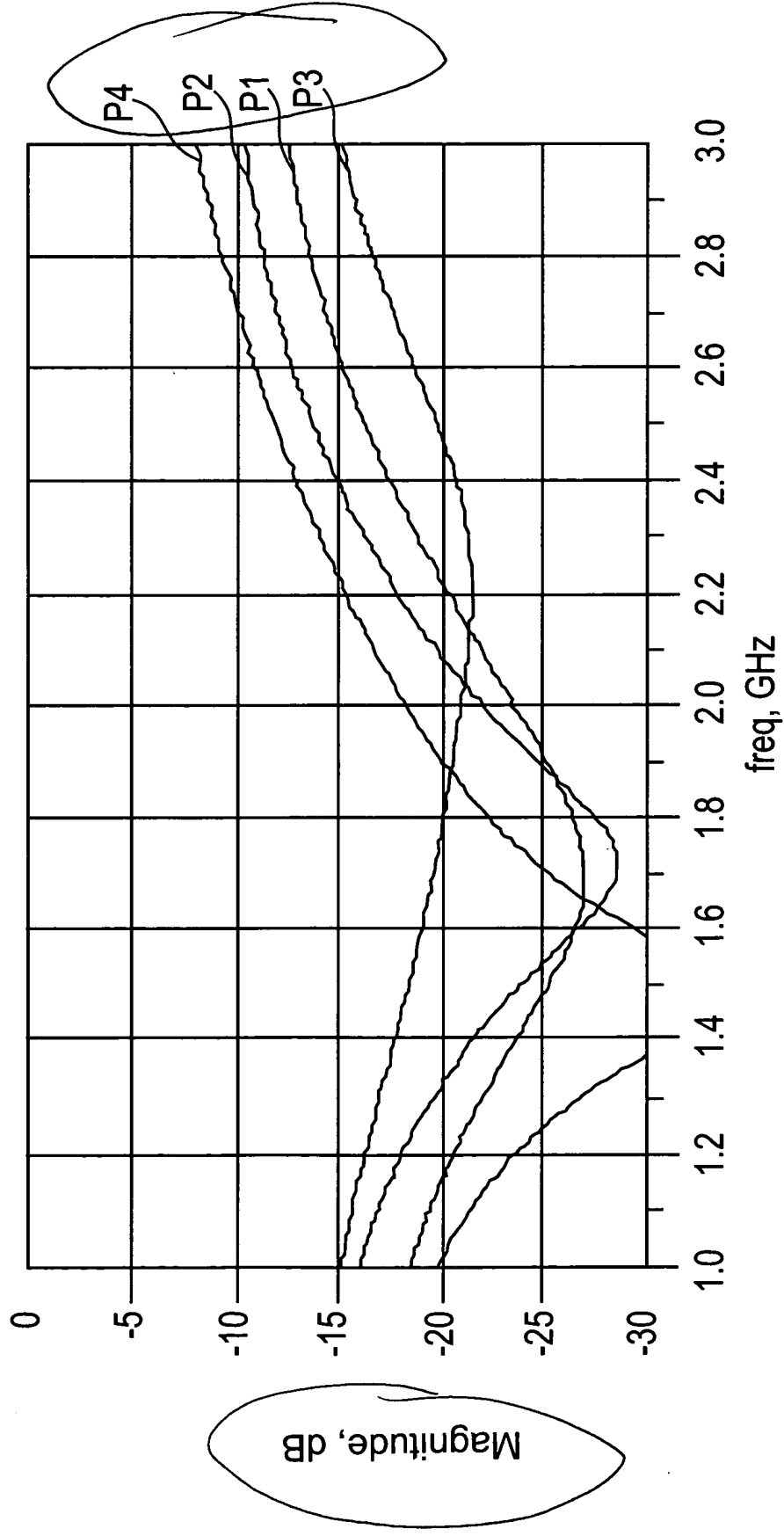
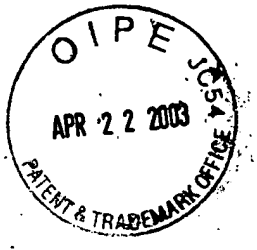


FIG. 12



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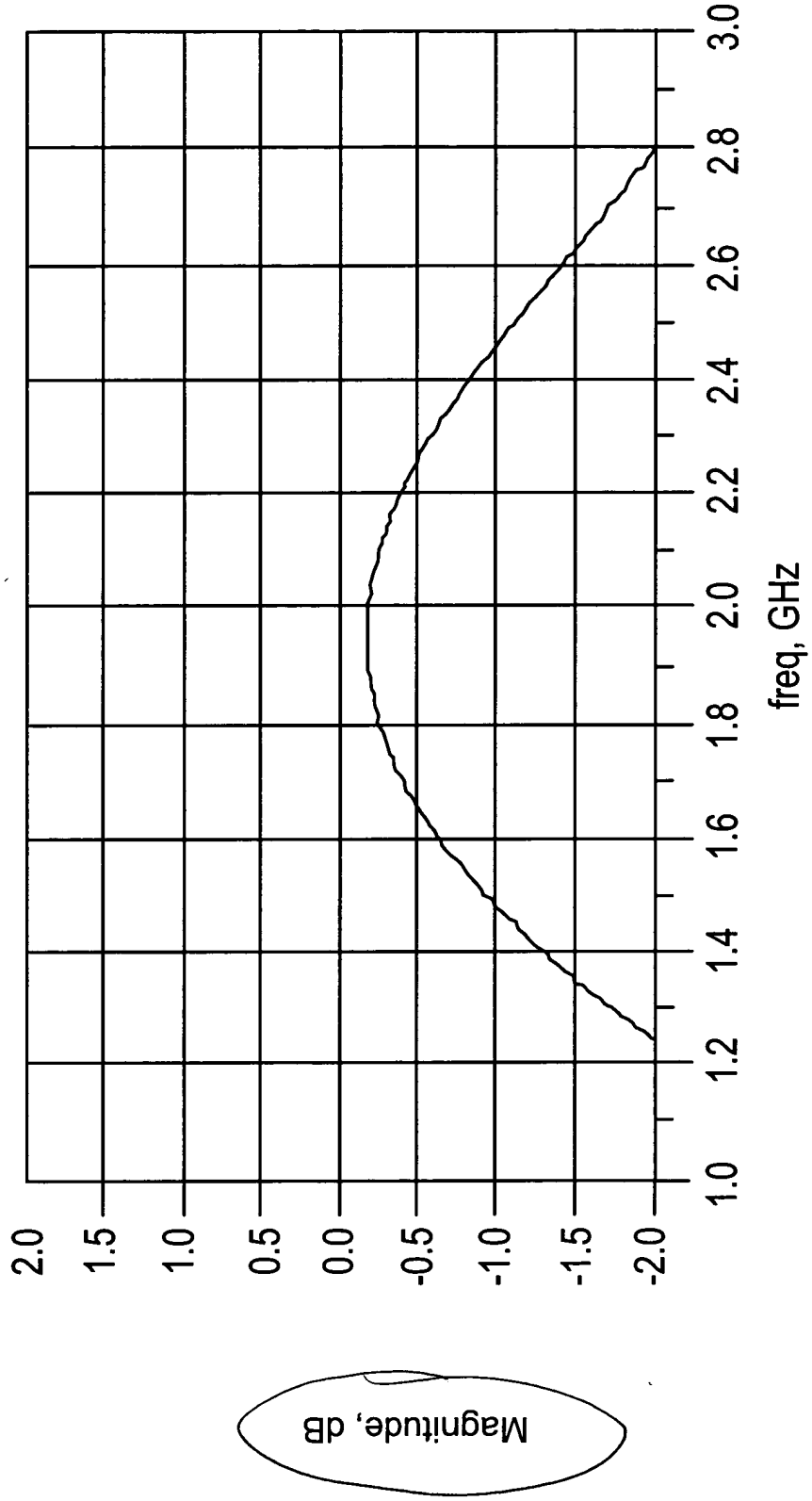


FIG. 13

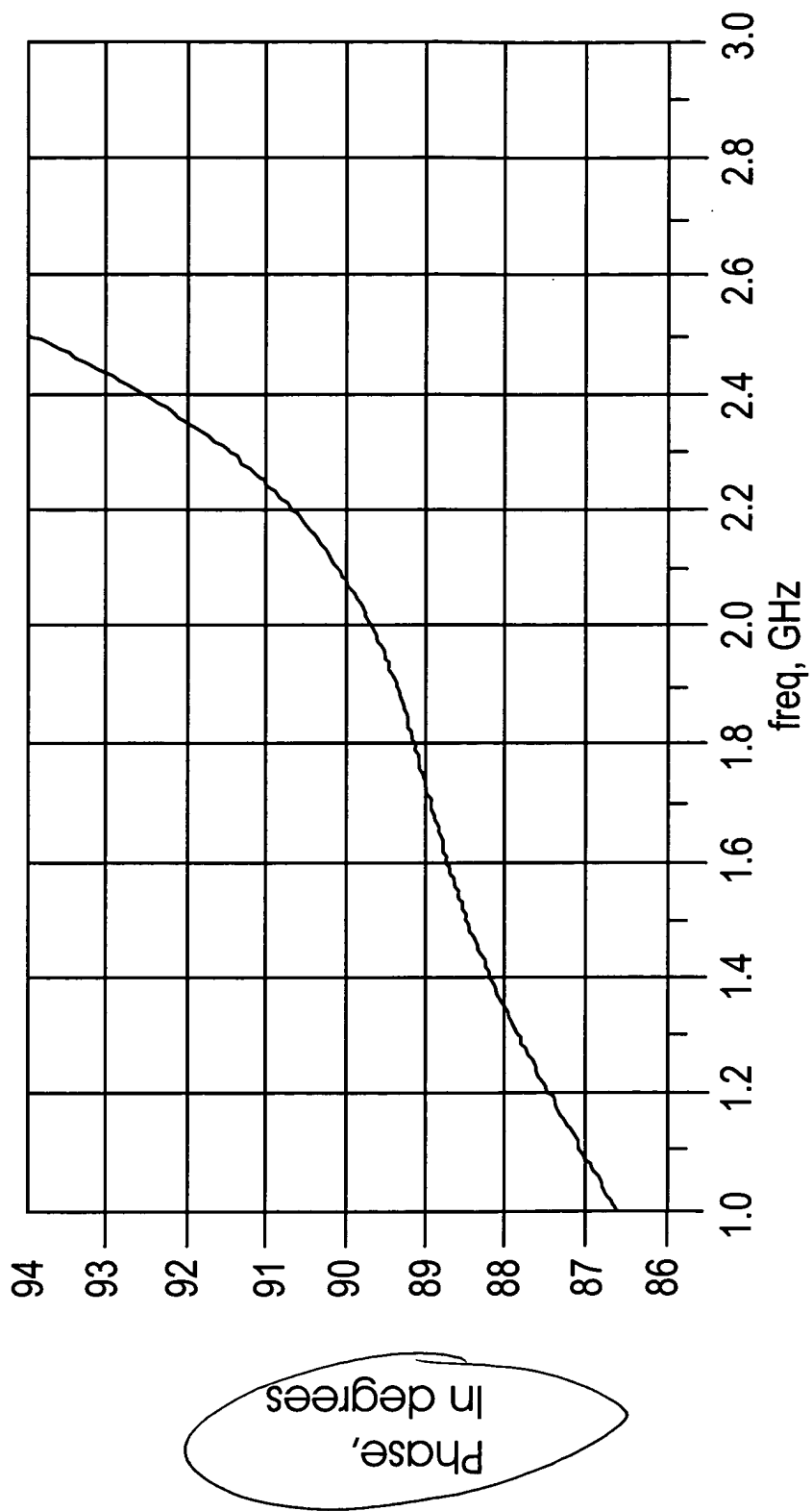
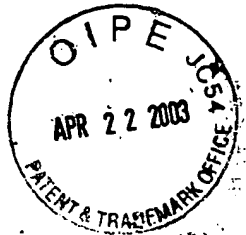


FIG. 14



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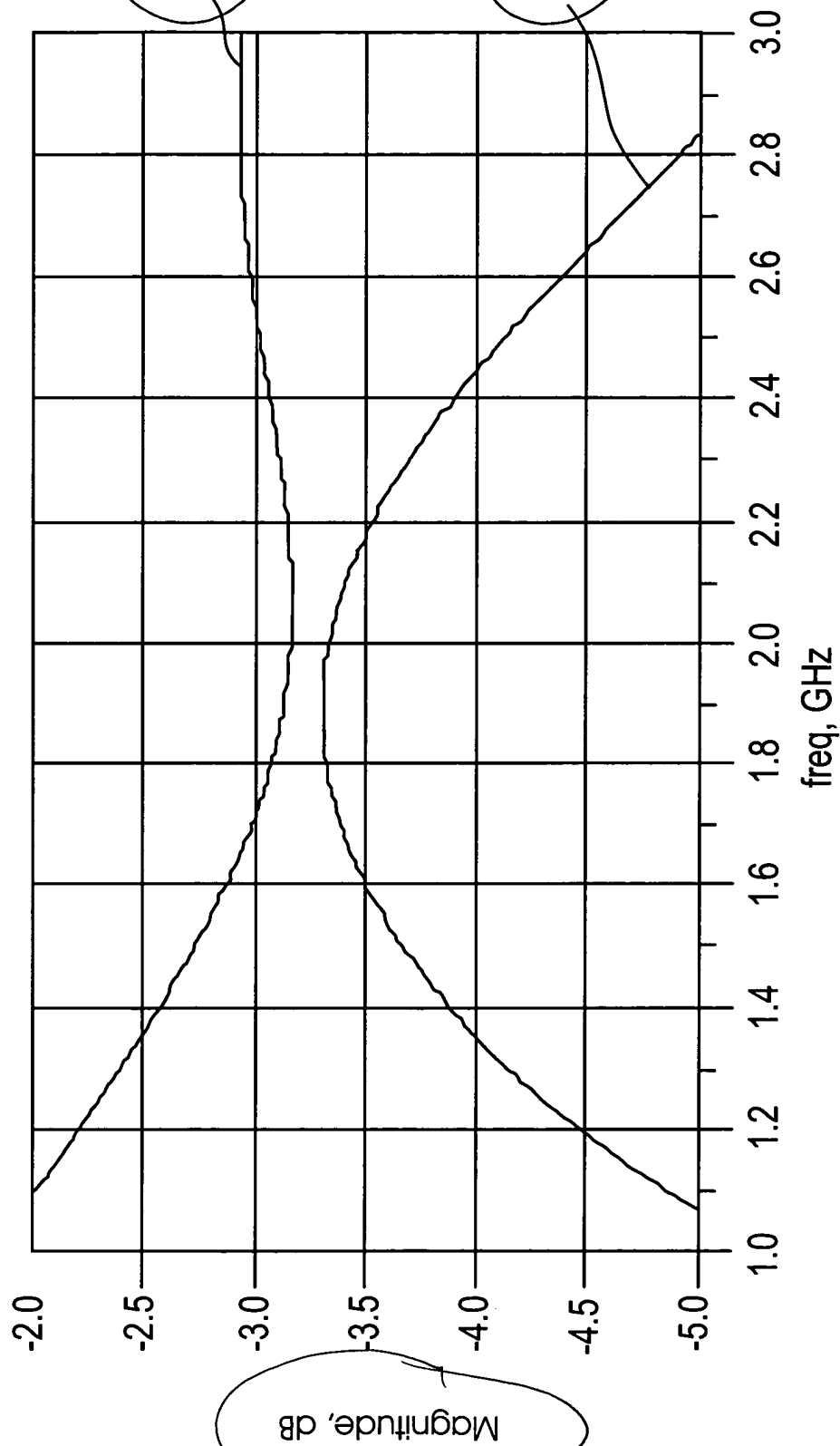


FIG. 15



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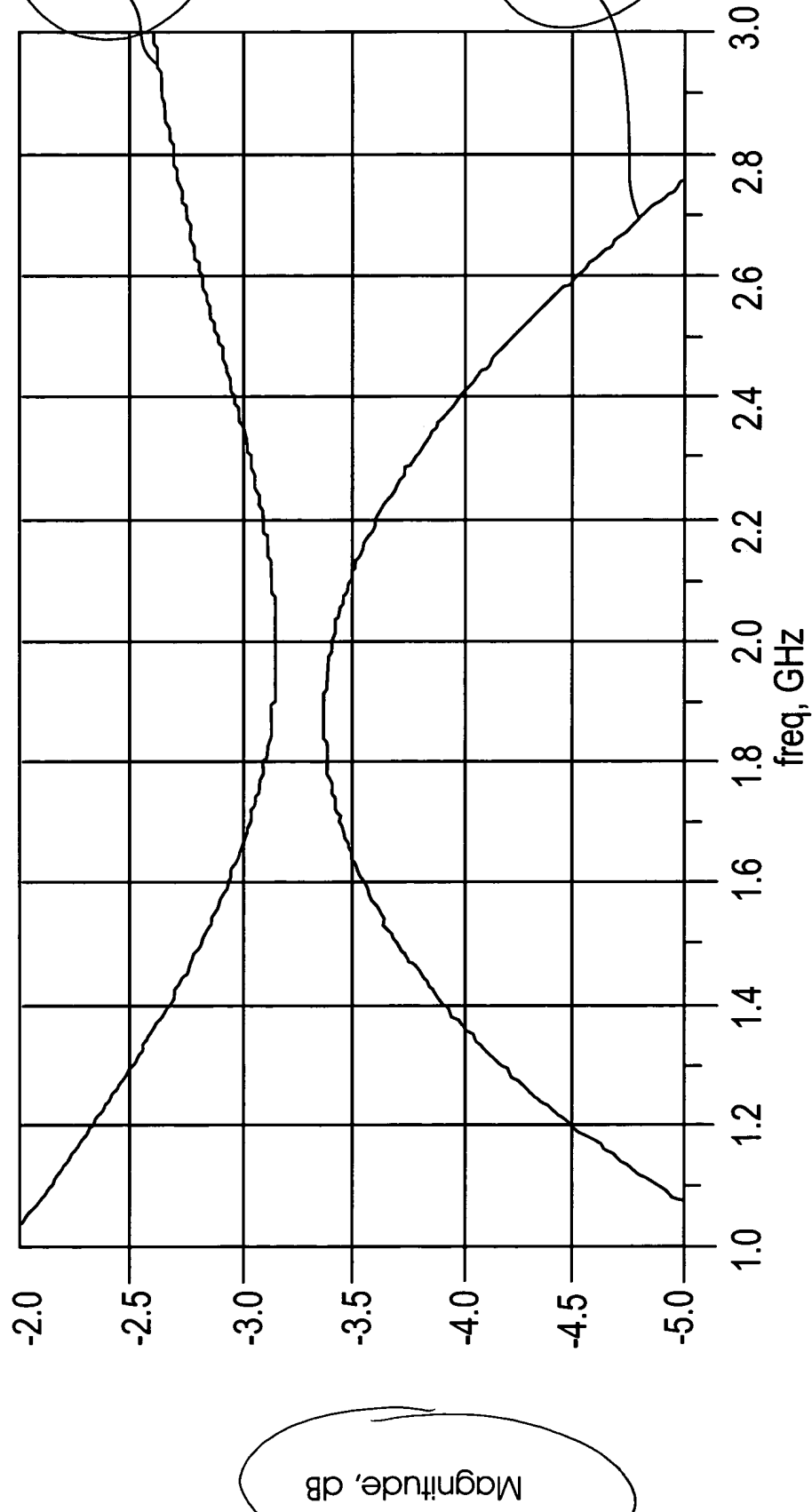


FIG. 16



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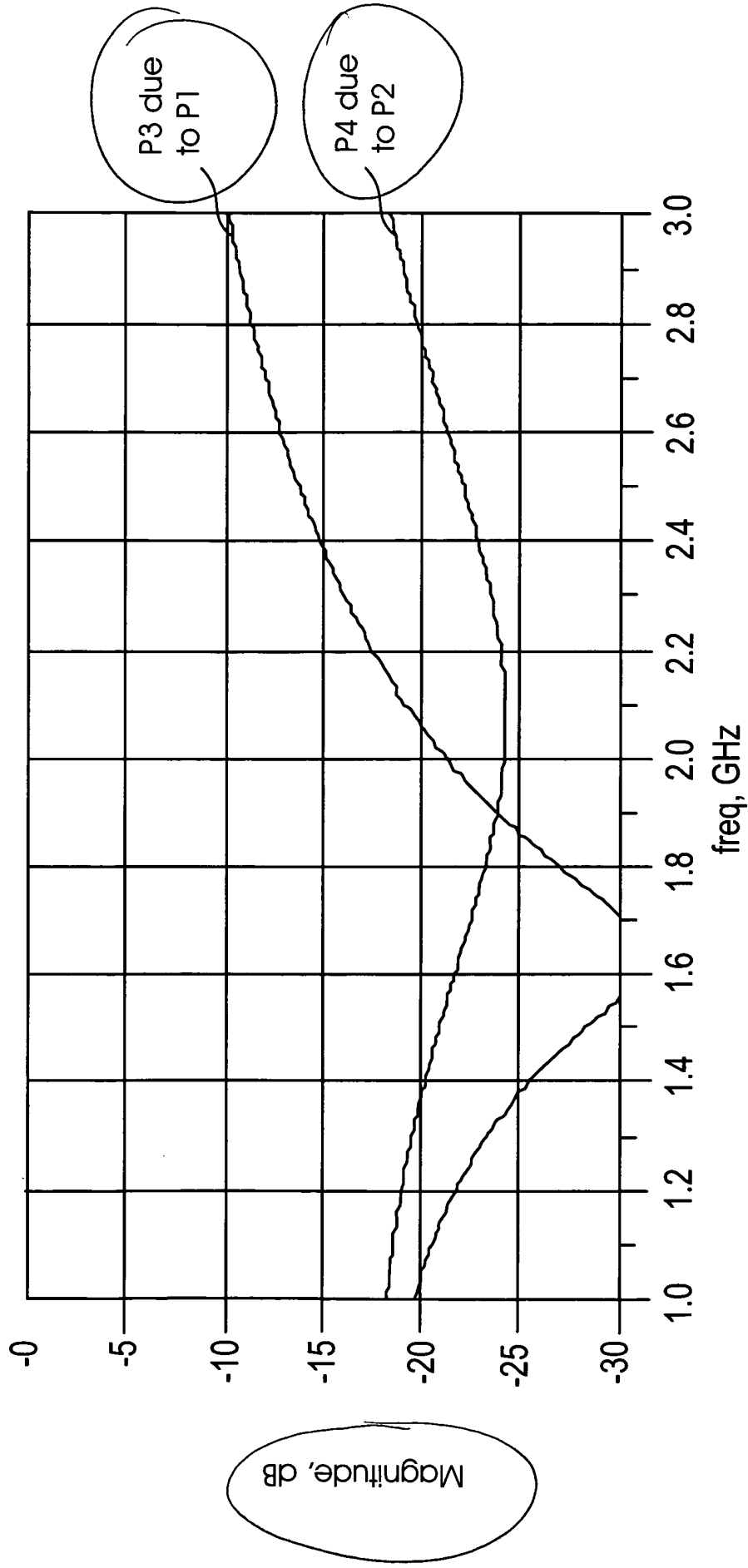


FIG. 17